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AUTHOR Donaldson, Morag Lennox
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ABSTRACT

Questions and sentence completion tasks were used to investigate the ability of twenty-four 5-year-old and an equal number of 8-year-old children to explain actions in terms of intentions. When the children were given information about an action and a result, they were able to infer that the reason for the action was the agent's intention to achieve the result. They were also able to maintain a distinction between reasons and results, and to mark this distinction linguistically. The implications of the findings are discussed both in relation to children's cognitive abilities (e.g., their understanding of causality) and in relation to their linguistic abilities, especially their understanding of "because" and "so."
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CHILDREN'S EXPLANATIONS OF ACTIONS :

A PSYCHOLINGUISTIC STUDY

Morag Lennox Donaldson
Department of Psychology
Plymouth Polytechnic

A B S T R A C T

The ability of 5 and 8 year-olds to explain actions in terms of intentions was investigated, using a Questions task and a Sentence Completion task. When the children were given information about an action and a result, they were able to infer that the reason for the action was the agent's intention to achieve the result. They were also able to maintain a distinction between reasons and results, and to mark this distinction linguistically. The implications of the findings are discussed both in relation to children's cognitive abilities (e.g., their understanding of causality) and in relation to their linguistic abilities, especially their understanding of because and so.

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S U M M A R Y

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INTRODUCTION

The experiment reported in this paper investigates children's ability to produce explanations of actions in terms of the agent's aim or intention. Such explanations (e.g., John wound up the toy car because he wanted it to go.) will be referred to as explanations in the intentional mode, and will be distinguished from explanations in the empirical mode which explain events or states in terms of temporally prior events or states (e.g., The window broke because a ball hit it.). Most previous studies of children's understanding of the causal connectives, because and so have been based on the empirical mode. The present study seeks to extend our picture of children's knowledge of the connectives' meaning and of children's ability to explain by considering the intentional mode.

The task of dealing with intentional explanations imposes a number of demands on the child. First, it is cognitively demanding in that a distinction has to be maintained between the reason-action relation (e.g., John wants the car to go → John winds up the car) and the action-result relation (e.g., John winds up the car → The car goes), and yet these two relations are interdependent since the reason for the action corresponds to the agent's desire to achieve the result of the action.

Second, the task of dealing with intentional explanations is linguistically demanding in that the child has to show that he has maintained the distinction between the reason-action relation and the action-result relation by using a linguistic construction which is appropriate to the intentional mode, such as:

John wound up the toy car to make it go.

John wound up the toy car because he wanted it to go.

John wound up the toy car so (that) it would go.

All of these sentences express a reason-action relation and the verb which is used to refer to the result of the action (go) occurs in its non-finite form. This contrasts with sentences in the empirical mode which express an action-result relation and in which a finite verb form (went) is used to refer to the result of the action:

The toy car went because John wound it up.

John wound up the toy car so it went.

If the child fails to observe this distinction between the empirical and intentional modes, then he will tend to produce cause-effect inversions, such as:

*John wound up the toy car because it went.

A further linguistic demand is that the child has to distinguish between because and so constructions within the intentional mode. In a because sentence, the reason is expressed by using a phrase which refers to the agent's desire or aim (wanted to), whereas in a so sentence the reason is expressed by using a modal construction (would) which refers to the predicted result of the action. Again, failure to observe this distinction will result in cause-effect inversions:

*John wound up the toy car so he wanted it to go.

*John wound up the toy car because it would go.

This study aims to assess 5 and 8-year olds' ability to cope with these cognitive and linguistic demands.

METHOD

The subjects were 24 5-year-olds (mean=5;10) and 24 8-year-olds (mean=8;2). There was also an adult control group of 40 Psychology undergraduates.

In the first session, the subjects received a Questions task, and in the second session they received a Sentence Completion task. The tasks were administered orally. For each item in both tasks, the child was presented with two pictures and was told a story. The top picture depicted an action (e.g., John winding up the toy car), and the lower picture depicted a result of the action (e.g., The car going). The agent's intention was not explicitly mentioned in the story. In the Questions task, the subject was required to answer a Why? question about the action (Why did John wind up the car?). In the Sentence Completion task, the subject was asked to complete a sentence fragment which described the action and which ended in because or so (John wound up the car because .../John wound up the car so ...).

Half of the adults received a written version of the Questions task and half received a written version of the Sentence Completion task.

RESULTS

The children showed a strong tendency to produce well-formed causal sentences in the intentional mode. In the Questions task, 81% of the 5-year-olds' responses, 82% of the 8-year-olds' responses, and 97% of the adults' responses were well-formed intentional explanations. The corresponding percentages in the Sentence Completion task were 65%, 83% and 95%. The results of the Questions task indicated that all three age-groups had a strong preference for expressing intentional explanations by means of the infinitive construction (e.g., John wound up the toy car to make it go).

Nevertheless, even the 5-year-olds demonstrated an ability to use the because and so constructions appropriately. As Table 1 shows, the children produced more well-formed because and so sentences in the intentional mode than they produced inversions. Although the inversion rate is low for both age groups, it is significantly lower for the 8-year-olds than for the 5-year-olds ($p < 0.05$ for the Questions task and $p < 0.02$ for the Sentence Completion task).

DISCUSSION

In their explanations of actions in terms of intentions, the subjects in this experiment demonstrated considerable linguistic and cognitive abilities. Both the 5-year-olds and the 8-year-olds were able to infer the agent's intention on the basis of knowledge about the action and the result. This finding is congruent with Stein and Trabasso's finding (1982) that children of these ages can make inferences about motives on the basis of various types of information contained in stories.

The children in the present study also showed an ability to distinguish between the reason for an action and the result of an action, despite the fact that they had to infer the reason on the basis of their knowledge of the result. This is strong evidence that the children are capable of a considerable degree of cognitive flexibility and that their understanding of psychological causality has a systematic basis. Contrary to Piaget's claims (1929, 1930), the children are not confused about what is a reason and what is a result.

The children were also able to mark the distinction between a reason and a result linguistically. They used linguistic constructions which are appropriate to the intentional mode, and they observed the distinction

which holds between because and so within the intentional mode. These results contribute to the growing body of evidence (Hood, 1977; Trabasso, Stein and Johnson, 1981; Donaldson, 1983) which suggests that by the age of five years (if not before) children have a good understanding of the causal connectives' meaning. Further, the present study indicates that this understanding is not restricted to the empirical mode but extends to the intentional mode.

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TABLE 1. Comparison between mean number of inversions and mean number of well-formed intentional responses using "because" or "so".
(Maximum possible per cell = 12.)

	<u>INVERSIONS</u>	<u>INTENTIONAL ("BECAUSE"/"SO")</u>
QUESTIONS		
<u>5 years</u>	0.75	3.42
<u>8 years</u>	0.21	4.79
SENTENCE COMPLETION		
<u>5 years</u>	1.40	6.80
<u>8 years</u>	0.65	8.10